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THE DEVELOPMENT OF A CONCEPTUAL SYSTEM FOR DEALING WITH PROBLEMS OF CURRICULUM AND INSTRUCTION.

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*CURRICULUM RESEARCH, *CURRICULUM PLANNING, *INSTRUCTIONAL DESIGN, *CONCEPT FORMATION, *SYSTEMS CONCEPTS, EDUCATIONAL NEEDS, LEARNING EXPERIENCES, EDUCATIONAL OBJECTIVES, VALUES, LOS ANGELES, CALIFORNIA, CHICAGO, ILLINOIS

A PLANNED, RIGOROUS SEARCH WAS CONDUCTED FOR A CONCEPTUAL SYSTEM BY MEANS OF WHICH THE CENTRAL PROBLEMS OF CURRICULUM DEVELOPMENT AND INSTRUCTIONAL INNOVATION ARE IDENTIFIED AND RELATED TO EACH OTHER. EACH SEGMENT OF THE RATIONALE FORMULATED WAS RELATED TO AND CONTINUALLY CHECKED AGAINST PERTINENT RESEARCH AND RELATED STUDIES DURING THE DEVELOPMENT OF THE PROJECT. PRELIMINARY DISTINCTIONS WERE MADE AMONG THREE KINDS OF DECISION PHENOMENA--(1) VALUES, (2) EDUCATIONAL AIMS, AND (3) LEARNING OPPORTUNITIES. IN THE PROCESS OF RATIONAL CURRICULUM CONSTRUCTION, IT WAS CONCLUDED THAT ONE MOVES FROM VALUES TO EDUCATIONAL AIMS AND FROM THE LATTER TO LEARNING OPPORTUNITIES, AND ALSO FROM MORE GENERAL TO MORE SPECIFIC FORMULATIONS. IT WAS SUGGESTED FROM THIS SYSTEMATIC PROCESS THAT ONE COULD FINALLY DEFINE OBJECTIVES WITH GREAT SPECIFICITY IN ORGANIZING LEARNING PROGRAMS FOR SPECIFIC INDIVIDUALS OR GROUPS. A MAJOR EMPHASIS WAS, HOWEVER, THAT ONE CANNOT LEGITIMATELY DEDUCE EDUCATIONAL ENDS FROM VALUES, OR LEARNING OPPORTUNITIES FROM EDUCATIONAL ENDS, SIMPLY ON THE BASIS OF LOGIC OR COMMON SENSE ALONE, BUT RATHER MUST INTRODUCE, IN ORDER TO MAKE SUCH DEDUCTIONS, CERTAIN ASSUMPTIONS WHICH ARE NOT LIKELY TO BE OBVIOUS. IT FOLLOWED, THEREFORE, THAT CONSULTATION WITH SPECIALISTS OF ONE KIND OR ANOTHER IS NECESSARY IN MAKING EACH OF THE DERIVATIONS INVOLVED, AND IN SOME INSTANCES IT MIGHT BE NECESSARY TO ASSESS CONVENTIONAL WISDOM (WHAT THE PUBLIC BELIEVES OR WANTS, OR WHAT PROSPECTIVE STUDENTS KNOW BEFORE CURRICULUM PLANNING BEGINS). IN CONCLUSION, THE ULTIMATE STARTING POINT IN CURRICULUM DEVELOPMENT FOR A SPECIFIED OBJECTIVE MUST BE A SET OF VALUES. FLOW CHARTS FOR DEVELOPING CURRICULUMS FROM THE USE OF THESE VALUES WERE PROVIDED, REPRESENTING A PRELIMINARY CONCEPTUAL SYSTEM. (JH)

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THE DEVELOPMENT OF A CONCEPTUAL SYSTEM FOR DEALING WITH PROBLEMS OF CURRICULUM AND INSTRUCTION

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FOREWORD

Twenty years have elapsed since I first encountered the curriculum ideas of Ralph W. Tyler, then professor and chairman, department of education, University of Chicago. These ideas stimulated me then and have influenced my educational activities in many ways since. The present report is an attempt to use some of Tyler's concepts, refine others, and add several of our own in attempting to advance the faint but continuing dialogue about curriculum as a field of study.

While a professor in curriculum at the University of Chicago, I began the work which is reported in progress here; namely, a search for a conceptual system by means of which the central problems of curriculum can be systematically identified and related to each other. A grant under the provisions of Public Law 531, 83rd Congress (Cooperative Research Program of the Office of Education), enabled me to bring together four colleagues in this pursuit: Margaret P. Ammons (now at the University of Wisconsin, Madison), a specialist in curriculum; Alicja Iwanska (now at the State University of New York at Albany), an anthropologist; James A. Jordan (now at Emory University, Atlanta, Georgia); and Maurice N. Richter, Jr. (also at the SUNY at Albany), a sociologist.

We met frequently in what usually proved to be difficult and, at times, almost vexing discussions. It was almost impossible "to get purchase," so to speak, on the questions, problems, issues, and modes of investigation involved. Usually, we concluded these sessions with the request that one or more of us prepare position papers on the problems most immediately before us. Often, others contributed spontaneous and unsolicited position papers on the same, related, or divergent topics. The result was a stack of uncoordinated manuscripts, varying in length from a page or two to fifty or more. But we seemed unable to get much more than a glimmer of the unifying threads we sought. A gestation period was needed. Postponement of time for a "final" report was requested and approved, with accompanying increasing discomfort for all concerned as time passed and no report appeared.

Meanwhile, I elaborated on and used the ideas in many ways: in papers and addresses, in the analysis of curricular reports and courses of study, and in consulting activities. A means of inter-relating the component concepts began to take shape - in action, so to speak. Then, in January, 1966, I was able to bring back one of my former colleagues, Maurice N. Richter, Jr., who re-read our earlier documents and formulated a conceptualization of some of the ideas contained in them. I then used some of these documents, several of my previous papers, and Professor Richter's draft in writing what appears on subsequent pages.

I take full personal responsibility for the shortcomings of the report and for possible mis-interpretations of my colleague's concepts, at the same time recognizing that this document could not have been prepared without their contributions. To all of them I extend my appreciation.

Special thanks go to Mrs. Elsa Gilbert who typed the manuscript under very difficult circumstances; and to Miss Marion Braun and Mrs. Dominica Fitzgerald who reproduced and assembled the manuscript under similarly trying conditions.

John I. Goodlad
principal investigator
June, 1966

I

CONCEPTUAL SYSTEMS IN CURRICULUM

Nowhere in education is there greater need for conceptual systems to guide theory-building, research, and planning than in the field of curriculum. By conceptual system, I mean a carefully engineered framework designed to identify and reveal relationships among complex, related, interacting phenomena; in effect, to reveal the whole where wholeness otherwise might not be thought to exist. Such a system consists of categories abstracted from the existential phenomena the system is designed to describe and classify, categories which can be readily discussed and manipulated at consistent, clearly identifiable levels of generality and which can be developed from different perspectives.

A conceptual system is more general than a theory, nurturing a variety of theories pertaining to parts of the system. Further, while giving rise to hypotheses (which are part and parcel of theories), it is neutral with respect to hypotheses. That is, a conceptual system suggests realms for fruitful hypothesizing but does not itself mandate a specific hypothesis. Such a system is, then, more than a theory in scope but less than a theory in precision and prediction.

Just as a conceptual system has structure, so does it perform functions. In curriculum, then, it facilitates the following: (1) the identification of problems and questions presumably having relevance to planning any instructional program; (2) the clarification of the types of inquiry likely to be productive in dealing with these problems and questions (i.e., empirical-inductive or theoretical-deductive or some combinations of the two); (3) the revelation of possible connections among these problems and questions; (4) the identification of promising data-sources for dealing with these problems and questions; and (5) the initiation of processes designed to reveal the relevance of these sources and of data extracted from them to the problems and questions classified by the system.

A conceptual system provides a bridge between general theory and specific practice. The worth of that bridge depends upon its ability to bear two-way traffic. If the theoretician cannot use the system to gain perspective and, subsequently, to formulate theories, build models, and conduct research, he turns his back to it. If the practitioner, even with great effort, cannot see in the theoretical models derived from the system at least blurred reflections of his daily concerns, he turns his back to them. In either case, the system is deprived of nourishing feedback, so essential to self-correction, and quickly perishes. The theoretician's inquiries remain narrow; the practitioner's endeavors remain in their deeply-grooved channels.

Curriculum inquiry designed to give rather immediate and direct assistance to ongoing processes of curriculum has been a compelling preoccupation of American educators, especially since the second decade of this century. The work of Bobbitt,[1] Bonser,[2] Charters,[3] Harap,[4] Draper,[5] and others readily comes to mind. The 1926 Yearbook (Part I) of the National Society for the Study of Education, The Foundations and Techniques of Curriculum-Construction,[6] was produced by a committee of the period's leading educators: Bagley, Bobbitt, Bonser, Charters, Counts, Courtis, Horn, Judd, Kelly, Kilpatrick, Rugg (Chairman), and Works. Certainly, the existential problems have not been neglected by first-rate minds.

These men appear to have been interested primarily in analyzing the role of curricula in American life, posing steps for making important curricular and instructional decisions, and recommending specific curricular practices. All of them were much concerned with ends: the aims of education and the objectives of schooling. In recent years, literally dozens of theorist-writers have sought to develop a point of departure for dealing with curricular problems by extracting implications from characteristics of learners, subject-matter, or all three.

These approaches, in general, depend upon a set of operational assumptions which, when followed through to their conclusions, produce specific recommendations for curriculum construction or reform. They are particularly useful in revealing where curriculum makers might arrive in their thinking and with their products when certain beliefs or values are used in dealing with specific curriculum problems. These approaches are less useful in identifying categories dealt with in common by curriculum planners and in explaining what happens when alternative assumptions are applied. There has not been, therefore, a clustering of differing theoretical positions with respect to the same categories of curricular phenomena (that is, to the commonplaces of curriculum as a field of study) and the systematic testing of these theories through research. Consequently, the conditions for meaningful discourse and cumulative inquiry have not been present.

Nonetheless, curriculum speculation of the past has produced a formidable array of topics which now constitute the substance of some graduate courses labelled "curriculum" or "curriculum theory." Clearly, the curriculum specialist requires a vast background of knowledge if he is to push very deeply into them. Expressed as questions, a common list might read as follows:

1. In what ways does knowledge of learners, or of subject-matter, or of society contribute to curriculum construction?

2. What is the potential contribution of an educational philosophy to curriculum construction?

3. What is the potential contribution of a psychology of learning to problems of curriculum construction?

4. How do differing patterns of curriculum organization affect processes of instruction?

5. To what decision-making processes in curriculum do studies in the behavioral sciences make a contribution?

6. Are there some guidelines for directing the absorption into the curriculum of new content in rapidly changing and expanding fields such as science and mathematics?

The practitioner can see at least some of his problems in such questions. Further, in contrast to the "ought" and "should" pronouncements so common to the curriculum field, they provide some basis for research. But what does the theoretician do with them? Do they provide perspective, visions of a larger whole? Ways of finding answers, of knowing when one has answers, and of using what one presumes to be answers are obscure.

The key explanation for this obscurity is that curricular phenomena - that is, commonplaces for purely curriculum discourse - are not identified. We know not what curriculum - in contrast to a curriculum - is, and choose not to name it.

Tyler[7] has moved above these questions to a more productive four:

1. What educational purposes should the school seek to attain?

2. What educational experiences can be provided that are likely to attain these purposes?

3. How can these educational experiences be effectively organized?

4. How can we determine whether these purposes are being attained?

This list appears to be more productive than the previous one for at least three reasons. First, it provides the practitioner with a rationale by means of which to examine his problems. Second, the questions presumably define curriculum and the answers to them provide a curriculum. Third, the actual phrasing of the questions suggests differences in their character, different procedures, therefore, for answering them, and some possible relationships among the questions. The "should" in the first question calls for an initial value position. The second question calls for a deduction from the first and suggests the possibility of comparing several means. The third is meaningless without answers to the first and second. The fourth is self-correcting within the limits set by the initial answer to the first and, when answered, could readily lead to a fresh round of answers to all four.

Most of the curricular questions raised from Bobbitt on down can justifiably be placed within Tyler's framework or legitimately translated into his terms. He has clarified and systematized what appear to be central questions running through the practical affairs of curriculum makers. It probably is fair to say that Tyler put the capstone on one epoch of curriculum inquiry and, in so doing, dramatized the need for another: to prepare the field of curriculum for theory-building through the construction of conceptual systems.

How shall we proceed toward the formulation of such conceptual systems? A conceptual system in curriculum concerns itself with general questions, questions which derive their viability from the fact that they persist in practice. Careful observation serves to identify what curriculum makers do. Strangely, although we have amply described curricula, we have little knowledge of what curriculum makers do. Perhaps, then, our first ill-formed constructs should serve only to describe, abstracting a common set of categories to make meaningful description, comparison, and generalization possible. Nothing in the work of curriculum makers dictates how a problem will be cast in the system, however; nor, for that matter, whether it will appear there at all. But again, the system must shadow practice to a degree or lose its usefulness.

From observation of curriculum planning and of curricula, we may find what curriculum is. Or, do we define it before we observe? Does our definition, however derived, influence our determination of fundamental categories and, if so, how? Is "objectives" a viable category or do we put ourselves in a straitjacket by thus suggesting a separation of ends and means? There may be no point even in speculating on such questions and, therefore, on the substance of our categories until the hard data from observation are before us.

To be useful, the categories of a conceptual system must be readily accessible to discussion and manipulation at consistent, clearly identifiable levels of generality and, to a reasonable degree, reflect practice. Curriculum workers almost invariably deal with the ends and means of education. These, therefore, are likely to be included in a substantive category of any conceptual system in curriculum.

Preliminary observation of reality suggests, further, that curriculum planning occurs at several levels of remoteness from the learner and is carried on by a wide variety of persons. Although these levels overlap and responsibility for the substantive decisions of ends and means at each level is far from clear, construction of a three-level model can be defended: instructional (with decisions primarily the responsibility of a teacher or team of teachers guiding a specific group of learners), institutional (with decisions primarily the responsibility of total faculty groups under the leadership of administrators), and societal (with decisions the responsibility of lay boards and legislators at local, state, and federal levels of government). The societal level of decision-making might well be sub-divided according to types of organizational entities. A conceptual system, then, that ignores these levels of decision-making in favor only of substantive categories is less than satisfactory.

Observation of reality reveals, also, that there is a dependent relationship between levels of curriculum decision-making although, again, the nature of this relationship is far from clear. Nonetheless, boards of education expect their decisions to be carried out, regardless of the bases on which these decisions are made. The superintendent of schools serves, then, both to facilitate expectations of the board (even though he usually contributes to determination of these expectations) and to interpret the meaning of societal decisions for institutional levels of decision-making. Similar transactional and deductive processes go on between institutional and instructional levels of curriculum planning. Presumably, a useful conceptual system in curriculum possesses categories that include such processes.

A conceptual system identifies data-sources to be consulted in seeking to answer problems and questions identified by the system and in conducting processes implied by that system. Ideally, one would expect curriculum workers to turn exclusively to the best knowledge available--that is, the data-source of funded knowledge--in making curriculum decisions. But observation of practice reveals otherwise. Board members and professional educators frequently employ popular beliefs, however archaic or anachronistic these may be in the light of specialized knowledge. Conventional wisdom rather than funded knowledge becomes the prime data-source. For some decisions, it is desirable to seek out what the body politic or sub-publics of it believe to be true or to be good and desirable. For other decisions, it is desirable to seek out the viewpoints of specialists in a given field of knowledge. A conceptual system in curriculum should point to the data-source or sources likely to be most relevant to the kind of decision to be made.

Sketched in broad strokes, then, a conceptual system by means of which curriculum planning might be systematically studied would include at least the following:

1. An identification of levels of decision-making, specified according to remoteness from the learner. Three possible categories, moving successively away from the learner are instructional, institutional, and societal.

2. An elaboration of the substantive curriculum decisions and sub-decisions at each level.

3. A specification of the type of decision to be effected at each level and between levels of the system. This specification would include the processes involved in studying and effecting these decisions: hence, transactional decisions lend themselves nicely to empirical analysis, deductive decisions lend themselves to logical analysis, although such a neat separation over-simplifies.

4. An identification of appropriate data-sources to be consulted for each type of decision, e.g., funded knowledge in contrast to conventional wisdom.

5. A clarification of authority and responsibility for decisions based on office and of authority and responsibility based on proximity of individuals or classes of individuals to appropriate data.

A conceptual system is not value-free. To accept curriculum practice as one beginning point is to express a value. But once having posed the problems and issues according to an initial set of values, a conceptual system should facilite the application of alternative value positions to each commonplace of the system. Thus, over time, the consequences of approaching curriculum problems from different perspectives could be systematically studied.

As our conceptual systems are refined, we shall know more precisely where to turn for the purpose of resolving persistent curriculum issues. Some fields used as data-sources may prove unrewarding. We shall thus know that there is no point in coming back to them for knowledge they cannot yield. Other fields may prove potentially rewarding but too immature to provide the answers needed. We shall thus know not to abandon them but to come back to them later. To search outside of education for answers to our educational problems is fruitless until we have first conceptualized these problems into systems that describe them, explain them, and point the way toward data needed in their solution.

FOOTNOTES AND REFERENCES

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2. Frederick Gordon Bonser. The Elementary School Curriculum. New York: The Macmillan Co., 1920.

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5. Edgar M. Draper. Principles and Techniques of Curriculum Making. New York: D. Appleton-Century Co., 1936.

6. National Society for the Study of Education. The Foundations and Technique of Curriculum-Construction. Twenty-sixth Yearbook of the Society. Bloomington, Illinois: Public School Publishing Co., 1926.

7. Ralph W. Tyler. Basic Principles of Curriculum and Instruction. Chicago: University of Chicago Press, 1950.

II

DEFINITIONS

Curriculum and Rationality

Curriculum may be viewed from many different vantage points and at several levels of generality or specificity. For a student, the curriculum is what he perceives to be intended for him in his courses and classes, including assigned readings, homework exercises, field trips, and so on. For the teacher, it is what he intends for the students; at one level of insight, a perceived means for changing student behavior. For teachers (and administrators) in concert, the curriculum is the whole body of courses offered by the institution or all planned activities including, besides courses of study, organized play, athletics, dramatics, clubs, and other programs (Webster). For citizens and policy-makers, the curriculum is the body of educational offerings available to whatever groups of students or kinds of educational institutions concern them. For a philosopher, theologian, or educational reformer, the curriculum might be the learnings to which groups of students, in his judgment, should be exposed.

All of these perspectives concern themselves with end products in the form of intended learnings.[1] An intended learning is simply what is to be learned by individuals, developed in learners, or produced in society through or as a consequence of education. Statements of intended learnings may be expressed at any level of generality or specificity. We suggest some distinctions among such statements later in this section. A curriculum, then, as defined here, is a set of intended learnings.

The curriculum of an educational institution is a very real part of the total culture of that institution.[2] Both this curriculum and the processes used in developing it can be observed, described, and analyzed, just as the language of a people and the processes by which it came into being and is being refined can be subjected to analysis. The field of inquiry which subjects these latter processes to scrutiny has come to be known as "linguistics." The field of inquiry which subjects curricula and curriculum planning processes to scrutiny is identified here as "curriculum."

Curriculum, then, is a field of study taking as its subject-matter a curriculum, the curriculum, curricula and the various phenomena of curriculum construction. Compared with curriculum, linguistics is a relatively mature field and, as a consequence, has a set of categories (changing from time to time, admittedly) readily recognizable to linguists - phonetics, phonology, morphology, accent, syntax, semantics, etc. - within which studies occur and knowledge accumulates. Curriculum has few such categories. There is little agreement on the phenomena for investigation, nor on terms for those on which there is some agreement. It follows that there is little accumulation of knowledge in curriculum and, therefore, not yet much of a field.[3]

A central purpose of this document is to pick up and continue the dialogue in curriculum,[4] admittedly a feeble one. The range and significance of phenomena potentially within the scope of curriculum, however, are such that a strong dialogue, accompanied and supported by theory and research, is highly desirable.

It must be stated that the present immaturity of curriculum as a field of study is due in large measure to the inability (or unwillingness) of its students to regard a curriculum or the curriculum as only part of the educational culture. Consequently, almost all things educational tend to be included under the study rubric, "curriculum," as most textbooks carrying the word in the title so vividly illustrate. In some definitions, the curriculum includes teachers, buildings, administrators, and "everything that happens to students under the auspices of the school." One knows not from such definitions whether to study teachers as a commonplace in the curriculum itself or as a factor influencing something else which is more centrally part of the curriculum.

We have chosen here, therefore, to focus much more narrowly on a curriculum or the curriculum as intended learnings. Curriculum as a field of study, then, focuses on what is involved in selecting, justifying, and arranging these learnings. We are very much concerned about teachers and students but now in acquiring some understanding of their role as data-sources or as influences in the selection and arrangement of intended learnings. The final arrangement of a set of learnings might depend, for example, on the maturity of the students for whom they were intended, or it might not. In either case, learners are a potential data-source in deciding how to arrange learnings.

A curriculum, as defined here, is the end product of a number of decisions. One set of curricular decisions involves determination of ends.[5] To select learnings without concern for ends is to behave irrationally. Another set involves determination of means. One cannot evaluate alternative routes in terms of rationality without knowing what destination is sought. While one rational way of justifying means is to check their relationship to ends - logically or empirically - another is to check their efficiency or effectiveness. Might there be a most economical way? In a totally unpredictable world, however, in which we have no way of anticipating the consequences of any of our actions, this concept of rationality would be meaningless. If we have no information about where various roads lead, we cannot evaluate in terms of rationality the behavior of a person who follows a given route in search of a given destination.

Rational curriculum planning involves knowing the decisions that go into the production of curricula, basing the actual decisions on reasons and data (e.g., "I consulted what curriculum inquiry has thus far identified as the relevant data-sources"), and doing the whole effectively. Curriculum is necessarily and characteristically praxeological inquiry.

A rational curriculum consists of intended learnings which are the product of certain decisions made wisely and efficiently, decisions which are identified and discussed in this and subsequent sections. But to produce a rational curriculum, it is not enough to have educators behave rationally in relation to attainment of various discrete ends. Other requirements must be met. The various discrete ends must support - or, at least, not negate - each other and be perceived as means for achieving some overall end or set of ends. One does not have a rational curriculum if efforts to achieve a relatively minor end with maximum efficiency interfere with attainment of more fundamental ends. Further, the ends and means adopted by several levels of authority in an educational system or by the total staff of an institution must be coordinated. Each teacher might have a rational conception of ends and means within his immediate sphere but unless there is consensus among members of the total staff at some level of decision-making, the curriculum as a collective product will not be rational.

A rational curriculum, as here defined, is not necessarily desirable or acceptable from all perspectives. A person who strongly disagrees with the ends sought through a curriculum might prefer irrational means. Most Americans would prefer this kind of irrationality over a curriculum organized rationally to attain the ends of a totalitarian society.

Rationality in curriculum planning as defined here calls for both clarification and acceptance of ends by those conducting or responsible for the educational enterprise. Rationality is impeded when responsible educational authorities are unable to resolve their own disagreements or the conflicting views of powerful pressure groups. The problem is compounded, of course, by the fact that various groups in a pluralistic society wish to postpone consensus until reasonably certain that their own views will prevail.[6] Rationality is impeded, too, when teachers either are unaware of agreements on ends for the institutions in which they teach or choose to ignore them. In fact, then, rationality in curriculum planning is so dependent on the good sense, good will, and good faith of human beings that one might well despair over ever achieving a rational curriculum! But this is simply to despair over the human race, to say nothing of its educational processes.

Rationality in curriculum planning may be at times and from some perspectives undesirable and may not be attainable. Nonetheless, we assume here that it is desirable often enough and attainable to sufficient extent to warrant exploration of what seems to be involved in constructing rational curricula. The result of such exploration should be a rationale or, in the terms of Section I, a conceptual system for curriculum: a set of categories relevant to curriculum discourse and, hopefully, some approaches to dealing with them. (See Section I).

Some Further Definitions

A value is defined here as a belief that something is good or bad, desirable or undesirable. A person is making value statements when he says that democracy, world peace, a high level of affluence, and a long life expectancy are desirable, or that any of these is undesirable. A value statement does not necessarily tell us anything directly about education. The statement that world peace is desirable, for example, does not spell out tasks for education nor, for that matter, imply that education has a role to play in the attainment of world peace, although many people believe most emphatically that it does. A given value statement does not necessarily provide ends for education but values are basic to the determination of educational ends.

An educational aim is a remote end for the guidance of educational activity. Statements of educational aims imply both selection of values and commitment to education for their attainment. A person is selecting a value and stating an educational aim when he says that education (not necessarily the schools or the schools alone) should develop the potentialities of all individuals, respect for the rights of others, persons who know and accept their state in life, an appreciation of the cosmos, and so on. These are very vague statements. They provoke very different thoughts among individuals. But they are not meaningless. It would be difficult, for example, to reconcile developing the potentialities of all individuals, on one hand, and having persons accept "their" station in life, on the other.

Educational aims provide a sense of the larger system of values that is to guide educational processes. They may not be clear but they are called upon often enough in condoning or condemning this or that educational practice. To keep open and active the discourse about the kinds of human beings we hope to develop through educational processes is to keep open-ended the timeless inquiry into the good life in the good society (and a value position is enunciated herewith!)

An educational objective is a statement of what students are to know, be able to do, prefer or believe as a consequence of being in the program. If we say that students are to learn French, to learn a specific French word, to learn to drive a car, to learn to value democracy, dictatorship, capitalism, or communism, or to learn to brush their teeth, we are setting forth educational objectives. They are not equally clear, however. Presumably, we want students to brush their teeth as regular behavior and not just learn about brushing teeth - a distinction which should be made clear. Further, we do not know whether the students are to learn to speak or read or write French or all three; but we do know that they are to grapple with French, not Spanish.

Ambiguity and imprecision in statements of educational objectives have led to substantial current interest in stating objectives behaviorally; that is, so that the behavior to be acquired by students is both clear and stated with them (rather than teachers, for example) as subjects: appreciate the role of economic factors in modern life, apply generalizations about long vowels, obey playground regulations, balance on one foot for at least two minutes, and so on. There is little ambiguity here but further clarification is still possible. For example, there readily could be disagreement over what "appreciates" involves. The intent of an educational objective, then, is to specify at least part of what the student - the vehicle in which the intended learning is carried - will be doing in or getting from the program. The behavior sought must be sufficiently explicit for it to be observed or to be readily elicited by means of a testing instrument.[7]

A learning opportunity is defined as a situation created within the context of an educational program or institution for the purpose of achieving certain educational ends. When we specify that students are to take a chemistry course, perform chemical experiments, write divers papers, read plays, or see mountains, rivers, and lakes, we are posing learning opportunities and beginning to suggest the general character of what the learners will be called upon to do in seeking to attain educational ends. The nature of the student body may be known in only the most general way and, therefore, the learning opportunities are suggestive rather than prescriptive.

An organizing center for learning is a specific learning opportunity set up for identifiable students or for a student. An organizing center for learning may be a book, field trip, question, topic, or problem that serves as the catch-hold point through which a specified behavior is to be developed.[8] But this focal point, ideally, is merely the visible end product of a host of prior decisions based on observation or consideration of the students, other possible books or topics, the space and time available and, of course, the educational objectives to be attained, as well as in other considerations. These and related matters are reserved for discussion in subsequent sections.

Most writers in curriculum refer to both "learning opportunities" and "organizing centers" as "educational experiences" or "learning experiences." Both terms are rejected here as synonymous for what we intend to convey. The word "experience" implies what happens to the learner; it is the product of reacting to a stimulus.[9] Our definition of curriculum, given at the outset of this section, implies that the final act of curriculum planning is designation of the organizing center. In effect, a series of organizing centers constitutes the tangible curriculum to be experienced. What happens to the learner or what he experiences is, of course, of supreme significance; it is the living proof of strengths and weaknesses, rationality and irrationality, in the curriculum and in the curriculum planning processes. But what goes on inside the learner is life itself, not a curriculum as we have defined one.[10]

We have in the foregoing very arbitrary classifications, ranging from the general to the specific. Further, each category permits a substantial range in generality and specificity within it. There comes a point where the items classified under one category touch those of another and, therefore, merge into this second category. In effect, we have a continuum on which several divisions are marked so as to separate the more general items from the less general.[11]

Clearly, there is need for extensive taxonomical or other analyses by means of which real distinctions in generality and specificity or in other aspects among statements of educational ends and means might be differentiated.

Even without such analyses, however, the distinctions made here are useful in that they reflect certain curricular reality and reveal some of the kinds of decisions that must be made carefully and deliberately if a rational curriculum is to result - two requirements of a conceptual system in curriculum as laid out in Section 1. Citizens do, indeed, make general statements about what their educational institutions should seek to accomplish, statements which reflect value commitments, often subconsciously held. Similarly, the programs of educational institutions - again, often subconsciously - reflect a larger value structure. And teachers internalize values as well as try to be reasonably clear on what they are seeking to do for, with, and to their students.

The task of curriculum as a field of study is to hold up a light to the distinctions, decisions, and clarifications to be made, hopefully so that curriculum planning and curricula will become increasingly rational.

FOOTNOTES AND REFERENCES

1. What various sub-publics within the educational enterprise perceive a curriculum to be is itself a subject for investigation. Observation suggests that it is viewed to be a cluster or several clusters of intended learnings and is, then, a tangible, substantive entity. (Borne out in "A Study of Childhood Schooling, unpublished study, by John I. Goodlad and Associates). To what more remote ends these intended learnings contribute is much less a consideration. (See Margaret P. Ammons, "Educational Objectives: The Relation between the Process Used in Their Development and Their Quality," unpublished doctoral dissertation, University of Chicago, 1961).

2. The concept of the curriculum as part of the culture of the educational institution is introduced in James B. Macdonald, "Some Contributions of a General Behavioral Theory for Curriculum," unpublished doctoral dissertation, University of Wisconsin, 1956.

3. The validity of this statement is revealed in the reports of curriculum research appearing at three-year intervals in the Review of Educational Research of the American Educational Research Association. Both the categories for reporting and the studies reviewed differ markedly from issue to issue - and there is precious little research.

4. The authors frankly admit to a bias toward the work of Ralph W. Tyler and seek both to reinforce and expand upon his Basic Principles of Curriculum and Instruction. Chicago: University of Chicago Press, 1950, first appearing in mimeographed form some twenty years ago.

5. On this, students of curriculum are agreed. It is the concern of the first statement in Tyler's (op. cit.) rationale, and is borne out in such standard curriculum works as: B. O. Smith, W. O. Stanley, and H. J. Shores. Fundamentals of Curriculum Development. New York: World Book Co., 1957; Hilda Taba. Curriculum Development. New York: Harcourt, Brace and World, Inc., 1962.

6. See, for example, Harold B. Dunkel, "Value Decisions and the Public Schools," School Review, 70 (Summer, 1962), p. 165.

7. Much confusion over educational objectives arises from the fact that educators and others use "weasel words" which are elusive in meaning, or different words for the same interest, in stating educational objectives. Two handbooks are now available to assist with the process of specifying educational objectives so that the behavior intended is clear and the same words are used consistently for given behaviors: Benjamin S Bloom (ed.). Taxonomy of Educational Objectives: Cognitive Domain. New York: Longmans, Green and Co., 1956; and David R. Krathwohl, Benjamin S. Bloom, and Bertram B. Masia. Taxonomy of Educational Objectives. Handbook II: Affective Domain. New York: David McKay Co., 1964. Another little book is useful in making statements of agreed-upon objectives very precise; see Robert F. Mager. Preparing Objectives for Programed Instruction. San Francisco: Fearon Publishers, 1962.

8. For further elaboration of the concept of the organizing center, see Selected Writings of the late Virgil E. Herrick (edited by James B. Macdonald, Dan W. Anderson, and Frank B. May). Strategies of Curriculum Development, pp. 107-113. Columbus, Ohio: Charles E. Merrill Books, Inc., 1965; and John I. Goodlad, "The Teacher Selects, Plans, Organizes," Learning and the Teacher, pp. 55-59. 1959 Yearbook of the Association for Supervision and Curriculum Development. Washington: The Association, 1959; and John I. Goodlad, "The Organizing Center in Curriculum Theory and Practice," Theory into Practice, Vol. I (October, 1962), pp. 215-221.

9. Tyler, op. cit., p. 41, defines learning experience as "the interaction between the learner and external conditions in the environment to which he can react." Although emphasizing that the essential means of education are the experiences provided, not the things to which the student is exposed, he proposes the selection of learning experiences. To avoid this ambiguity, we propose the use of other terms.

10. The prime ground-rule for any useful discourse is agreement on definitions. The definitions presented here must be accepted, at least tentatively, if there is to be a meaningful dialogue between writers and readers. We fully realize that a curriculum sometimes is defined as "everything that happens to or is experienced by learners under the auspices of the educational institution" and are content to let others use it. But we must recognize that to use it is to begin with a different ground-rule and to initiate a different dialogue.

Curriculum workers, who have argued for decades about what the curriculum is, would be well advised "to get off the dime" by stating and tentatively agreeing upon at least one definition for each term in each separate discourse and carrying on from there.

11. Bobbitt (Franklin Bobbitt. How to Make a Curriculum. Boston: Houghton Mifflin Co., 1924.) virtually proposed the translation of general objectives into specific ones as the means of delineating what students in the program would do.

DECISIONS AND LEVELS OF DECISION-MAKING

Processes and Data-Sources

Rational curriculum planning seeks to produce valid and justifiable intended learnings. On what grounds valid? On which bases justifiable? Validation and justification call for data-sources and processes of inquiry.

We introduced the term "data-source" in the preceding sections without definition. A data-source is a general category of phenomena or category by which phenomena are classified from which data are extracted or might be extracted.

Knowing which data-source to consult when faced with the need for data is prime knowledge in human activity. One turns to psychology for general information about individual differences in human learning but to the learners themselves to find out about individual differences in a class to be taught. One turns to politics for principles of government but to the people for insight into how they wish to be or believe they are governed. In curriculum planning, one needs to determine at various times what is possible, what is believed, what is being done, what is happening as a result of what is being done, what is desirable, what is thought to be desirable, and so on. One consults a different data-source in each instance. In curriculum, there has been relatively little exploration of the relevant data-sources to be consulted in seeking to answer the various curricular questions of ends and means.

Curriculum inquiry, like other inquiry, requires two modes of investigation, each at its own time and each in its own place: the theoretical-deductive and the empirical-inductive.[1] In making curricular decisions of ends and means, there are times and places for logically-determined reasons and times and places for empirically-determined conclusions. But there has been little systematic differentiation of the two in curriculum planning.[2]

The preceding section implies that rational curriculum planning involves the derivation of educational aims from values, educational objectives from educational aims, and learning opportunities from educational objectives. The first is a prime data-source for the second, the second for the third, and the third for the fourth. But to assume that curricular ends and means are determined solely by a process of derivation or logical deduction from values is to oversimplify. Other data-sources, together with empirical-inductive inquiries, are called for.

The process of deriving educational aims goes back first to selection among values. Logicians can help us see contradictions among values. The predictions of population specialists, geographers, and others may reveal that unchecked "freedom for the individual" to populate the earth, pollute the air, and exhaust the water supply call for espousing values pertaining to the welfare of all mankind as well as to the welfare of each individual. With values selected, analyses of society may reveal that educational institutions have little contribution to make to the achievement of certain values, or that one kind of institution is much better suited than others to the attainment of some educational aims. Analysis of students in a program might show that they possessed the behavior implied in an objective before they came; students for whom such an objective would be appropriate never come to the institution. Studies might reveal that attainment of a given objective is desirable but quite unrealistic, given the time available for acquiring the behavior sought. Or, a learning opportunity might be dropped because it is seen to be in direct contradiction to the tenets of the religious group controlling the institution.

The ultimate derivation of learning opportunities does, indeed, involve a deductive justification from educational objectives, they in turn from educational aims, and aims from values. But the process is neither direct-line deduction nor deduction alone. A number of data-sources, as illustrated above, and empirical data derived from them are consulted in selecting and choosing at each successive level in the process. Further, values are not ignored after educational aims have been determined. In the final example above, a learning opportunity came into question because it conflicted with certain accepted values.

One could argue that this last happening could not occur in a fully rational process of curriculum planning. True. But we already have expressed the doubt that curriculum planning ever will be fully rational; we hope only for a considerably higher level of rationality than currently exists. No matter how carefully any rationale is set forth, human frailty will prevail to some degree - in constructing the rationale itself as well as in following it in curriculum planning.

The first curricular question set forth in the Tyler rationale[3] is one of aims or objectives. (He does not differentiate between these two levels of generality). It is an "ought" question: What educational purposes should the school seek to attain? Tyler proposes that this question be answered by systematically consulting three data-sources for suggestions: society, learners, and subject-matter specialists. Then, recognizing that some of the tentative statements of objectives so developed will be undesirable, contradictory, or unattainable, he proposes the use of two "screens" - philosophy and psychology - through which the statements must pass if they are to remain in the list.

Tyler does not propose turning to values first, as we do. Rather, after a tentative list of objectives has been formulated by consulting his three data-sources, they are validated against questions pertaining to the good life in the good society, what knowledge is of most worth, and so on, or against a carefully formulated philosophical system within which answers to such value questions already have been formulated. We propose turning to values as the primary data-source in selecting purposes for the school and as a data-source in making all subsequent curricular decisions.

It is becoming increasingly clear in all fields of inquiry that a completely value-free position is impossible. One must make a beginning, and to make a beginning is to accept certain assumptions; values are imbedded in assumptions. When one turns to an examination of the characteristics of society in seeking to formulate educational objectives, one's values are likely to guide him to some characteristics and not to others. Therefore, it is desirable to admit to these value positions at the outset. (In making such a statement, of course, we take a value position with respect to curriculum development).

None of the above is intended, however, to reject the value of a philosophical screen in selecting from among possible educational objectives. It is, in fact, a useful way of checking on the amount of "slippage" or irrationality that might have occurred in the supposedly rational process of deriving educational aims from values and educational objectives from these aims, a process not specifically identified by Tyler which we think to be central in curriculum planning. Values and philosophical positions inevitably enter into all steps in curriculum planning; many alternatives already will have been consciously or subconsciously ruled out by the time of Tyler's proposed screening. Therefore, we recommend similar formal and informal checks at all major decision-making points so that, hopefully, the selection of ends and means will be compatible with the values initially espoused. Curriculum planning involves more than seeking data. It involves, rather, the sensitive utilization of values and data simultaneously.[4]

It is within the above context that the concept "evaluation" takes on rich meaning. Evaluation is essentially a process of checking on values, as suggested above. This is why evaluation in curriculum is more than administering a test to students. Student performance is as much a product of curricular rationality as of student rationality, given a test that is truly valid in the sense of seeking to elicit from the students the behaviors sought in the curriculum.

Evaluation is a means of checking each step in the curriculum planning process; it is not just a terminal process of checking student performance. Once a curriculum is constructed, evaluation becomes a process of checking backwards on how and how well preceding decisions were made. Sound evaluation assesses learning opportunities in relation to educational objectives, objectives in relation to educational aims, and aims in relation to values. It contributes to rationality through revealing that otherwise attractive learning opportunities simply do not provide for practice of the behavior implied in the objective; that other objectives pertaining to stated aims might have been formulated; or that certain values selected initially are mutually incompatible. Careful evaluation forces validation and justification where none might have occurred otherwise.

Levels of Curriculum Decision-Making

It is conceivable and feasible that one individual could plan a curriculum for a student or group of students or, for that matter, that an individual could plan a curriculum for himself. In fact, both frequently occur. The planning - from selection of values, to formulation of aims, to refinement of objectives, to selection of learning opportunities, and finally to the creation of organizing centers for learning - if rationally conducted, would reveal clearly some of the derivations and appropriate data-sources, the whole unencumbered by political machinations and the need for consensus.

Curriculum planning in primitive cultures is similarly unencumbered. Immediate relatives or members of the tribe initiate neophytes into tribal customs and provide direct training in the skills needed for survival. Sometimes, the elders of the tribe select a few values for inculcation through training and assign responsibility for this training to a member of their group. He assumes a position comparable to the curriculum maker - be he superintendent of schools, curriculum director, supervisor, or teacher - in modern society.

But life in modern society is not this simple, and grows less simple by the hour. Curriculum construction by individuals or as depicted for primitive societies does not provide adequate models for the world we know and will increasingly know. The United States of America, the Soviet Union, Great Britain, Sweden, and any number of other nations would provide better examples.

We believe that the subsequent analysis is relevant, with various modifications, for most relatively large-scale curriculum planning activities, whether for private or public and whether for elementary, secondary, higher, adult, or professional education. It is particularly relevant, we think, to curriculum planning in the United States.

In Section I, we observed that curriculum planning occurs at several levels of remoteness from the learner. We used the term instructional to define the level closest to the learner. Here, two steps are involved: the very precise delineation of educational objectives and the selection of organizing centers for learning. Often the two are almost indistinguishable one from another: the child is to be able to use a table of contents, he looks up stories by finding their page numbers in the table of contents; the student is to learn to distinguish the gender of French nouns, he reads aloud a long list such as le mer, la chaise, le chien, la porte.

The organizing center is, in effect, a description of the stimulus to which the student is to respond. It involves so direct a derivation from the educational objective that it literally produces in the student a segment of the behavior called for in the objective. A behavior such as a psychomotor skill is displayed before one's very eyes. But many cognitive and affective behaviors are so subtle that reactions simply are not visible to the observer. Therefore, it becomes necessary to create an evaluative situation in which some form of terminal behavior is revealed and the success or failure of the organizing center demonstrated.

Selecting the organizing center involves more than deduction from the objective. Usually, many organizing centers can be deduced from one educational objective. The final selection of a few is determined from examination of other data-sources: the learners for evidence as to readiness, instructional materials as to authenticity of content, psychology for appropriate learning principles to employ, self (if the teacher is a human one - although even robots are now being programed with alternatives) for selection from a pedagogical repertoire, values for clues as to appropriateness, and so on. But one begins by "squaring" the organizing center with the objective. Objectives constitute the primary data-source for the selection of organizing centers.

Just as the organizing center represents a direct derivation from the educational objective, so the latter is a derivation from educational aims set by the institution's controlling agency. Usually this is a board selected by or appointed for a larger group serving as the institution's sanctioning body. In Section I, we used the term societal for the decisions made by such boards representing themselves or their larger constituency. The derivative jump from teachers (human or robot) at the instructional level to boards at the societal level reflects a simple society more than a complex, modern one.

Usually, a board is responsible for a large institution, or for many, and employs many teachers. It cannot check on the derivation processes of teachers to see whether the learning fare they set forth in their classrooms represents the true interest of the selected educational aims. But even in the case of a small institution, when individual checks on teachers might be possible, a wise board - usually serving only part-time and possessing little personal competence among its members regarding the derivative processes involved - delegates this responsibility to a manager or administrator.

A level of decision-making between instructional and societal is thus introduced. In Section I, we referred to it as the institutional level. The interposition of this level complicates the derivative processes we have been describing. In effect, a transaction has occurred between the board and its manager - and just what has been transacted often is far from clear. Another transaction must now occur between manager and teachers - and, in a large system of institutions, layers of personnel between manager and teachers. Again, just which is to be transacted usually is not made clear.

Section II implies the kinds of curricular decisions, at least, that should occur at this institutional level: the formulation of educational objectives and the selection of illustrative learning opportunities. It is unrealistic and undesirable for boards to formulate precise educational objectives. The task is extremely difficult (if it were not, it would be performed more often!) and demands specialized knowledge. For example, a board might well propose that children in the elementary schools learn to read and write French when research - of which they probably would be unaware - might suggest the desirability of learning to speak

French in the early years, with reading and writing following in the secondary schools. It is more rational, we think, for boards to concern themselves with more general aims and functions of their schools. But to maintain a level of generality desirable for boards is to create a most difficult problem of derivation for teachers.[5] Not only is logic involved but, in addition, there is need for highly specialized knowledge pertaining to the structure of the academic disciplines, the nature of learning, techniques of programing, and so on.

Unless there are well-established processes of rational curriculum decision-making at a level between boards of education and teachers - that is, at the institutional level - it is unlikely that rational processes for translating societal decisions into institutional decisions will exist. And into the gulf will come pressure groups of all kinds promoting this essay contest or that fund drive in the name of some value that may be highly significant but of little relevance to education or the functions to be performed by specific institutions. The ends and means of education, of schools, of teachers, and of students are thus determined outside of the structure formally charged with such responsibility.[6]

We see, therefore, the need for ends and means to be stated at a level of generality that, on one hand, conveys to the board assurance that provision is being made for attainment of each major aim and that, on the other, provides teachers with the general categories of behavior and substance from which the specifics of instruction are to be derived. Serving both masters adequately may call for two or more sub-levels of ends-means derivations at the institutional level. Thus, for example, the Montgomery County (Maryland) Board of Education -

employing part of the conceptual system for curriculum decision-making set forth in this document - approved a rather general set of purposes (more specific than aims but not expressed behaviorally) for its schools. But a highly skilled curriculum staff for the school system as a whole, with the help of consultants, found it necessary to translate these into an overall design for the curriculum as a whole and then separate designs for each subject taught in the schools. The ends and means set forth at each subsequent level of decision-making were derived from previous, more general decisions of ends and means.[7]

It might be useful to designate the possible sub-levels of institutional decision-making with a hierarchy of new terms for ends and another for means instead of employing simply "objectives" and "learning opportunities" for several sub-levels of generality or specificity. It might be preferable, also, to use the word "purposes" for objectives at the institutional level, since we use "objectives" at the instructional level. In regard to the former suggestion, however, we see little possibility of creating sub-levels to cover all circumstances and the creation of still more terms implying "objectives" and "learning opportunities", we believe, would lead to confusion. In regard to the second, we prefer to reflect popular practice. The term "objectives" is used to cover many levels of generality, even when used to define student behavior. We view the categories and their sub-divisions set forth in the taxonomies prepared by Bloom and his associates and by Krathwohl, Bloom, and Masia as representing the kinds of distinctions and formulations required at the institutional level, and the refinements of Mager as representing what is needed at the instructional level.[8]

We return now, briefly, to the societal level.[9] The sanctioning body - that is, the total group of persons responsible for bringing into existence and maintaining one or more educational institutions (in the United States, the taxpayers of a school district would be such a group) - must assume responsibility for selecting among values and formulating educational aims for the attainment of these values. In modern societies, this responsibility is delegated to an elected or appointed body or usurped by a dictator. (We shall ignore the latter possibility for purposes of this discussion).

Again, a transaction has occurred. And, again, the key question pertains to the precise nature of this transaction.

In rational curriculum planning, we think, the board assumes, through a transaction between it and the sanctioning body, responsibility for continuously seeking consensus as to what the educational institutions are for. The board is now - until removed from office - the controlling agency for these institutions. It should devote its energies primarily to maintaining a dialogue about and promoting inquiries designed to define educational ends.[10] Because this is a tremendously difficult task and because the "wrong" consensus may result in lost votes, elected board members, in the United States at least, devote most of their time to more immediately practical pursuits. As a consequence, educational personnel at both institutional and instructional levels of decision-making usually have no clear directives, no data in the primary data-source, to guide their daily actions. Ironically, the blame for this omission more often than not falls upon the educators, usually in the form of criticism of certain school practices. Sometimes, blame or praise, depending on the values of the viewer, falls upon highly visible individuals outside of the formal, official hierarchy who are seen as influential because of their speaking, writing, or other activity.

In a complex society, the societal level of curricular decision-making usually can be divided into sub-levels. In the United States, these levels are local, state, and federal, although many persons would question the right of the third of these to make decisions of the kind discussed here. Nonetheless, the federal level does, indeed, make significant curricular decisions either directly or indirectly through Congress, and administers them through the United States Office of Education, the National Science Foundation, and other federal offices.

Analyses of the actual or desirable roles of these societal sub-levels in American life are only beginning to appear.[11] Relatively little attention has been given to the respective responsibilities of each. It is traditionally (and perhaps anachronistically) assumed that local school districts are responsible for determining what their schools are for. But examination of state courses of studies and the enactments of state legislators reveals that controlling agencies at this level assume designation of the ends of education as their responsibility, too. And curriculum materials prepared by remote projects financed by the National Science Foundation bring into schools ends that often are not subjected to diligent local scrutiny.

The desirability or undesirability of these specific practices is not the question that concerns us here. Rather, we are concerned about the fact that actual practices are not adequately described or understood and about the fact that little attention has been given to questions of which levels should do what in curriculum planning. In effect, we are concerned that so little rationality enters into practices of such far-reaching significance.

In any society, the transactions indicated here inevitably are to a considerable degree political in character. In fact, in contrast to the derivative decisions set forth, which are substantive in character, the transactions between sanctioning bodies and controlling agencies, controlling agencies and administrators, administrators and teachers, are political decisions, in both the best and the worst sense of that term. All the known talents of persuasion, negotiation, compromise, and influence come into play.

Participants in these transactional processes turn to logical deduction, "hard" and "soft" research data, and various persons "outside" of the context of immediate negotiations - scholars, charismatic figures, and various "names" thought to carry influence. The first and second of these data-sources already have been identified and discussed. Our concern with them is that the logic be sound and the data both hard and appropriate to the question at hand. The third introduces a fourth category or level of curriculum decision-making which we designate here as ideological.[12]

The ideological level involves none of the transactions pertaining to the other three. But the ideological determination of ends and means rationally and not through idle speculation involves precisely the theoretical-deductive and empirical-inductive derivations proposed in this document. In fact, ideological formulation of the categories and decisions of curriculum construction, the subsequent simulation of alternative curricula from alternative value premises, and ensuing derivations represent curriculum in its purest form, curriculum as a form of inquiry uncontaminated by the vagaries of actual practice. In keeping with the ground rules set forth for a conceptual system in Section I, however, we have chosen always to test our abstract categories against the realities of curricular practice, particularly in the United States, so far as immediately preceding pages are concerned.

At the ideological level, as at all other levels, we are concerned with rationality and, therefore, with a set of rules for a human game that is to be played effectively. Therefore, we are not interested, except as examples of what we do not endorse, in idle speculation concerning intended learnings of the kind expressed at one time or another by human beings. We require of ideological curriculum discourse that definitions, decisions, data-sources, and derivations be set forth rigorously by participants in the game; that is, that they set forth and play by a set of ground rules reflecting at least the substantive realities of what is involved in rational curriculum planning. Unfortunately, few pronouncements - even most of those gaining considerable currency in the curricular market place - relative to curriculum by prestigious persons satisfy the criteria of rigor that must be applied if ideological curricula are to serve as data-sources in ongoing curriculum planning.[13]

In foregoing discussions of derivations, we have perhaps implied overemphasis on logical to the detriment of empirical derivations, even though at least some disclaimers have been stated. Actually, we are very much concerned with empirical-inductive processes and with the hard data of research. The subsequent section helps to correct any apparent imbalance. However, the kinds of research data needed for more rational curriculum planning are lacking. The conceptualizations set forth here are designed to contribute to the correction of this situation through stimulating theoretical inquiry and subsequent cumulative research.

FOOTNOTES AND REFERENCES

1. Conant (James B. Conant, Two Modes of Thought. New York: Trident Press, 1964), states the following as his credo:

> A free society requires today among its teachers, professors and practitioners two types of individuals: the one prefers the empirical-inductive method of inquiry; the other the theoretical-deductive outlook. Both modes of thought have their dangers; both have their advantages. In any given profession, in any single institution, in any particular country, the one mode may be underdeveloped or overdeveloped; if so, the balance will need redressing. Above all, the continuation of intellectual freedom requires a tolerance of the activities of the proponents of one mode by the other (p. xxxi).

2. Some promising inquiry into certain logical operations in teaching is now underway. See, for example, B. Othanel Smith and Milton O. Meux. A Study of the Logic of Teaching. Urbana: Bureau of Editorial Research, University of Illinois, 1963.

3. Ralph W. Tyler, Basic Principles of Curriculum and Instruction, p. 1. Chicago: University of Chicago Press, 1950. The reader is urged to turn to this basic reference now. The present authors accept in general the questions and data-sources set forth but do not repeat them here except as necessary to their purposes. We choose, rather, to attempt certain clarifications, modifications, and additions. In the process, some differences in the present approach and Tyler's approach become apparent. By putting the two together, perhaps a third, improved rationale for curriculum planning might result.

4. The Project on Instruction of the National Education Association made much of this point. See Schools for the Sixties (and supporting volumes in the series). New York: McGraw-Hill Book Co., 1963.

5. Responsibility for almost autonomous derivation of ends and means by university professors is the standard situation in higher education, on the assumption, presumably that they know their subjects best and, therefore, what should be taught to their students. This is a serious over-simplification of what is involved in and needed for rational curriculum planning, however, and is largely responsible, we think for the chaotic

condition of college curricula. Highly-specialized college professors may be among the least interested and poorest qualified persons to whom to entrust the overall questions of ends and means in matters, for example, of general education.

6. The report of John I. Goodlad (with M. Frances Klein and Renata von Stoephasius) of current curriculum reform in the United States (The Changing School Curriculum. New York: Fund for the Advancement of Education, 1966) reveals that many objectives of elementary and secondary schools are determined by remote curriculum planners, coming into the classrooms via their materials.

7. Edmund S. Hoffmaster, James W. Latham, Jr., and Elizabeth D. Wilson, "Design for Science," Science Teacher, Vol. 31 (November, 1964).

8. For bibliographical information regarding the two taxonomies and Mager's monograph, see footnotes and references for Section II.

9. One is struck with the similarity between our levels of curriculum planning and Parsons' four levels of structural organization of a complex social system: technical (which would correspond to our instructional); managerial (which is essentially our "institutional," although we might readily use his term to designate the role of administrators as an institutional sub-level); institutional (represented by a board; here we use the term, "societal"); and societal (political leaders and authorities, corresponding to at least one sub-level in our use of the same term). See Talcott Parsons, "General Theory in Sociology." Sociology Today (edited by Robert K. Merton, Leonard Broom, and Leonard S. Cottrell, Jr.). New York: Basic Books, Inc., 1959. See especially pp. 12-16.

10. The supporters and the recipients of education constitute a significant data-source for determining what various sub-publics expect of schools or other educational institutions and, therefore, for determining what values various groups wish to maintain or strengthen through education. For use of this data-source, see Lawrence W. Downey, "The Task of the Public School as Perceived by Regional Sub-Publics," unpublished doctoral dissertation, University of Chicago, 1959; Roger C. Seager, "The Task of the Public School as Perceived by Proximity Sub-Publics," unpublished doctoral dissertation, University of Chicago, 1959; and

Allen T. Slagle, "The Task of the Public School as Perceived by Occupation and Age Sub-Publics," unpublished doctoral dissertation, University of Chicago, 1959.

11. For discussion of many issues of respective responsibilities of governmental levels for education, see Seymour E. Harris (editor). Education and Public Policy. Berkeley, Calif.: McCutcheon Publishing Corp., 1965.

12. The four levels of curriculum discussion-making set forth here - instructional, institutional, societal, and ideological were first formulated for purposes of structuring a review of pronouncements, theoretical formulations and research pertaining to curriculum construction; see John I. Goodlad, "Curriculum: State of the Field," Review of Educational Research, Vol. XXX (June, 1960), pp. 185-198 (prepared with the assistance of Margaret P. Ammons). Subsequently, Goodlad used the first three in an analysis of and recommendations regarding the organization of curriculum in the United States; see Planning and Organizing for Teaching. Project on the Instructional Program of the Public Schools. Washington: National Education Association, 1963. Also, the "levels" concept has been used as part of the guiding rationale for at least two doctoral dissertations conducted under guidance of the principal investigator: Margaret P. Ammons, "Educational Objectives: The Relation between the Process Used in Their Development and Their Quality," unpublished doctoral dissertation, University of Chicago, 1961; Robert M. McClure, "Procedures, Processes, and Products in Curriculum Development," unpublished doctoral dissertation, University of California, Los Angeles, 1965.

13. Carl Tjerandsen, "The Adequacy of Current Treatments of General Education in the Social Sciences," unpublished doctoral dissertation, University of Chicago, 1958, concluded from an analysis of curricular pronouncements and recommendations in the social sciences that very few writers sought to answer any reasonably complete series of curricular questions in rigorous fashion. Most writers contented themselves with a few polemics pertaining to only one or two of a much larger number of relevant questions. Their ideological curricula could scarcely be defined as curricula at all; nor could their discourse properly be termed curriculum inquiry.

IV

ENDS AND MEANS

This section is concerned with certain problems, issues, and processes involved, first, in the derivation of educational ends and, second, in the selection and organization of educational means. It is, therefore, largely a refinement of ideas already introduced. No totally new processes are discussed but some new concepts are used and defined. The purpose throughout, as in this entire document, is to identify and reinforce through repetition, but through repetition that involves elaboration each time a concept or process is re-introduced, the categories, processes, and data-sources inherent in rational curriculum planning. It is hoped that, as a concomitant or consequence, the commonplaces of a conceptual system for studying, understanding, and guiding curriculum planning will become increasingly apparent.[1]

The Derivation of Educational Aims

The selection of educational aims involves, first, selection from among values; second, derivation of ends which can be achieved through education; and, third, choice of those aims deemed most relevant to the specialized interests of the institution involved. There is a very fundamental difference between accepting a value and accepting a value as a premise for educational ends. Education is not the only process through which to seek to attain values. For example, although no one really knows how the value of world peace can be attained, such non-educational activity as relieving hunger may be highly relevant. But even when attainment of a value appears to call for educational effort, this does not necessarily mean that the effort required is best made within the context of the particular educational institution for which a curriculum is being planned.

Changing conditions of laziness and inefficiency, for example, among members of a community might have relatively little to do with educational processes. Perhaps the people are lazy and inefficient, not because they were indoctrinated as children in these characteristics but because they are living and working under conditions which provide no incentives for hard work and efficiency. The conditions of employment may be such that diligence would not increase their pay and laziness would not reduce it. Perhaps, then, the problem of "laziness" should be attacked not by trying to inculcate a new set of values through education but by measures designed to provide relevant incentives.

This hypothetical example raises a most important question: To what extent do people behave the way they do because of the way they were educated and to what extent is their behavior determined by incentives (or lack of incentives) in the immediate situation? To the extent that one assumes that a person's behavior is determined by the way he was educated, one would try to change behavior by making adjustments in the educational system. On the other hand, to the extent that one assumes that a person's behavior is determined by the system of incentives operating in the immediate situation, one would try to change behavior by making adjustments in the system of incentives. Such an example - and one could cite many such pertaining to selection among values - points to the fact that the formulation of educational aims using values as the prime data-source involves much more than a process of logical deduction. Highly specialized knowledge is called for.

Even if it is clear that education constitutes the best means of attaining a value, there remains the decision as to whether or not an aim pertaining to it should be formulated for the specific educational institution involved. Educational institutions are specialized in one way or another. A totally unspecialized one assumes responsibility for all aspects of the education of all the citizens, young and old alike. A school or school system may be specialized in the sense that it assumes responsibility for only part of the education of its clientele, thus allowing for the influences of other agencies. Or, it may be specialized in the sense of assuming responsibility for the education of only some people.

Most educational institutions already are in existence and have decided in earlier times upon the specialized functions which they are to promote. Changes emerge from the realization that new values are emerging or that other institutions no longer are assuming functions which they once performed. But there will be little likelihood of such realizations occurring unless rational procedures prevail for identification of new values and assessment of the values being sought through existing educational institutions. Such procedures are necessary to the continuing self-renewal of all institutions.

Once a decision has been made to employ a given value as a premise for the formulation of educational ends, a new set of issues arises pertaining to the process of transition from values to educational aims. One of these is the relevance of students as a secondary data-source in selecting aims. Whether or not the aims are a dependent or independent variable so far as students are concerned is a significant matter. There is a tendency to assume that the composition of the student body already is known - that is, that the aims are a dependent variable - and that the task of curriculum planning is to develop a curriculum for that particular group of students. But aims could be considered independent of a specified student body.

Caswell distinguishes between the two possibilities as follows:

> Under our conception of equalization of educational opportunity... it is required that the school provide for a minimum number of years a program of general education in which the curriculum is so planned and organized that every student, of whatever ability of achievement, finds an appropriate educational opportunity.... This idea...indicates that standards should be derived from the potentialities of each individual rather than from norms or from performance levels determined in some theoretical manner. What is wanted is that each person be the best citizen he is capable of being....
>
> Turning to professional and vocational education, we have quite a different situation. It is not sufficient that a mechanic repair a car to the highest level of his ability; he must be able to make it run.... Each profession and vocation has within it certain levels of performance which have been achieved over years of development. The person aspiring to enter a profession or a vocation is expected by society to meet these professional requirements for performance.[2]

It is conceivable that a controlling agency might select aims independently of immediate needs and interests of the student population even for what it considered to be general education. If, for example, this agency represented a society attempting catch up with technologically more advanced societies at the greatest speed and regardless of cost, it might choose to maximize the development of scientific talent to the neglect of all other possible aims. An educational system with such an aim would entail considerable waste, in the sense that large numbers of children would go through a curriculum designed for the relatively few who ultimately would become scientists.

Analysis of some professional curricula reveal shifts - often made quite candidly - from aims formulated independently of the total population from which students are to be drawn to aims formulated with concern for characteristics of this population. Often, the direction of the shift depends on the size of and competition for the total pool of potentially available students. Frequently, unfortunately, the shift in time of short supply is toward downward adjustment of admissions standards rather than toward increased humanization of either ends or means. Modern adult education (rather than childhood education, interestingly) probably provides the most clear-cut example of educational aims as a dependent variable so far as prospective students are concerned.

In the United States, the literature on curriculum planning has developed largely in relation to elementary and secondary education and within the framework of a set of values emphasizing the welfare of individual students. That is, the aims of education have been treated as a dependent variable and curriculum inquiry has been organized predominantly around this implicit assumption. Any general model of curriculum, however, should allow for the possibility of educational aims and programs being derived either independently of or with careful regard for learners as a data-source. Such a model then suggests interesting possibilities for inquiry into, for example, the degree to which a society committed to development of the full potentialities of its young people sets aims that are dependent on or independent of essential characteristics of these persons and maintains programs inhibiting or promoting their vital talents.

The Refinement of Aims and Objectives

In Section II, we defined an educational aim as a remote end for the guidance of educational activity and an educational objective as a statement of what the students are to know, do, or believe. Presumably, the behavior defined in the latter is a refinement of behavior implied in the former. But Tyler observes that a useful educational objective specifies "...both the kind of behavior to be developed in the student and the content or area of life in which this behavior is to operate."[3] Most educational objectives, then, have two component parts: a behavioral element and a substantive element. Some, particularly in the psychomotor realm of behavior, are complete and meaningful without any substantive specification, or include it only for the purposes of illustration or further clarification of the behavior itself.

But most educational aims - and, therefore, objectives - in the cognitive and affective realms have an object as well as a predicate (the student being the subject). It is difficult to conceive of meaningful educational ends implying understanding or appreciating without specifying the "what". The taxonomies of educational objectives referred to in previous sections have little to say about the substantive element, however. These taxonomies reveal that the many different statements of behavior implied in all objectives (or, at least, in a very large sample) can be classified using just three categories - cognitive, psychomotor, and affective - and that these in turn can be subdivided into reasonably finite and discrete sub-categories.[4] Similar taxonomies or other forms of classification for the substantive element in objectives would be useful.

The problems in such analyses of the substantive elements are profoundly complex, however, partly because of the wide range of knowledge or human experience available for sampling. We have some familiar classifications: the humanities, the social sciences, the biological sciences, and the physical sciences including mathematics. And then we have some very arbitrary sub-classifications: English, zoology, biochemistry, philosophy, economics, etc. But neither of these arrangements is very useful for our present purposes except, perhaps, for indicating the very broadest range or delineation of learning opportunities to be made available. Various claims for the prior significance of one or the other of these divisions have been made and have had some influence on practice. One classic organization is that erected by Comte in which physicals are the ultimate units of matter; chemicals, as next in line, are organizations of these physicals; biologicals are the organization of chemicals; and so on. This kind of thinking is embraced in modern proposals for the "hard-core" subjects and often blocks the inclusion of newer disciplines or newer branches of old disciplines in the curriculum.

Current emphasis on "structure" of the disciplines in curriculum planning offers promise for delineating the substantive element in an objective more precisely and usefully.[5] Interestingly, although most current curriculum reformers endorse the concept of structure in their planning, few make any effort to be precise by formulating educational objectives in which the structural elements to be developed are made clear. However, their emphasis on concepts, principles, values, laws, and so forth is illustrative of their concern for emphasizing something substantive in the curriculum that is more powerful than facts alone. Their accompanying stress on inquiry, discovery, and induction also suggests the kinds of behavioral elements to be sought.

A little digging into the curriculum plans and products of such enterprises as those of the School Mathematics Study Group, the Physical Sciences Study Committee, the Science Curriculum Improvement Study, Project Social Studies, and others enables one, sometimes with considerable difficulty, however, to ferret out the kinds of behavioral and substantive elements that personnel in these projects might include in carefully-defined statements of educational objectives.

From the above discussion, it would appear that the category, "subject-matter specialists", constitutes the prime data-source in refining statements of educational aims to the point where they take on the greater clarity and specificity of educational objectives: psychologists for refinement of the behavioral components and various specialists in the subject-matters to be taught for refinement of the substantive components. This presupposes, of course, much wider representation of sub-publics in the initial selection of aims. Otherwise, the intended learnings are likely to emphasize the predominant preoccupation of psychologists with cognitive and of subject-matter specialists with their own fields. At the point of refining aims, then, these specialists are consulted not for purposes of determining the aims that *ought* to be selected - in rational curriculum planning, they will have participated in this process with their fellow-citizens - but for purposes of refining aims already selected.

Once objectives have been stated to reveal both behavioral and substantive elements, they still must be checked against other criteria before final utilization for the selection of learning opportunities. Are they comprehensive in the sense that the complete list makes provision for all the aims adopted by the controlling agency? Using this criterion of comprehensiveness involves both a logical, derivative check against the entire set of aims and a transaction between the controlling agency and its manager (between a board of trustees and the superintendent of schools, for example). Is the list of objectives internally consistent or do certain objectives counteract one another? A logician would be a useful data-source to consult in seeking to apply these criteria in the selection of educational objectives.

In time, hopefully, these processes will be aided by the research of behavioral scientists. Longitudinal studies could provide evidence as to whether or not attainment now of certain educational objectives results in fulfillment later of certain, more remote, educational aims. Similarly, experimental studies could provide evidence as to whether or not efforts to achieve two objectives simultaneously result in greater or less return than strategies of teaching one before the other. For example, does the learning of French enhance the simultaneous learning of Spanish?

Likewise, experimental studies hold potentiality for checking the criterion of attainability and lead to conclusions regarding the placement of educational objectives in an hierarchy of appropriateness for successive phases of schooling. The criterion of feasibility, on the other hand, might require a quite different kind of check. Perhaps attainment of a given objective is not feasible because of cost, space, or current viewpoints and prejudices among the citizenry. The citizens may have approved, in their innocence, intended learnings pertaining to understanding the human organism but balk at objectives pertaining specifically to understanding the reproductive system and processes. We see, then, that both funded knowledge in the form of scientific findings and processes (both theoretical-deductive and empirical-inductive) and conventional wisdom in the form of popular beliefs, customs, and understandings have their appropriate places as data-sources in the refinement of educational aims and the formulation of educational objectives. While one might choose to eliminate conventional wisdom and deal only with funded knowledge in formulating an ideological curriculum, no such luxury is available to those who plan curricula in the world's educational vineyards. Nor is it available to those who take as their field of inquiry a curriculum, curricula, or processes of curriculum planning.

The Selection and Organization of Learning Opportunities

The processes of selecting and organizing learning opportunities involve essentially three steps: 1) the derivation of learning opportunities from educational objectives; 2) the organization of these learnings into sets and sequences; and 3) the final selection of organizing centers for learning.

We have seen that educational objectives contain behavioral and substantive elements. Therefore, there must be provision for both in learning opportunities. Curriculum planning in Montgomery County, Maryland (conducted with the consultative help of the principal investigator) reveals how such provision might be effective.[7]

The committee constructing the science curriculum for the county schools selected the following behavioral elements: 1) observing events and using symbolic forms; 2) relating and developing event meanings; 3) investigating meaning and relationship; 4) restructuring events; 5) acquiring attitudes and values; and the following substantive elements: 1) the nature and structure of matter; 2) the nature of energy; 3) physical interactions; 4) biological processes and interdependencies; 5) cultural, sociological, and technological implications of science. Combining a behavioral and a substantive element gives a complete objective. Thus the combination of the fifth in each list gives us the following: "acquiring attitudes and values toward cultural, sociological, and technological implications of science." Such an objective needs further refinement in that neither the values and attitudes to be acquired nor the precise behavior involved in "acquiring" are defined. Such refinement is a necessary next step.

By combining each of the five behavioral elements with each of the five substantive elements, 25 possible combinations result. Perhaps only some of these combinations are wanted, a clarification quickly revealed by means of a grid:[8]

		Substantive Elements				
		1	2	3	4	5
Behavioral Elements	1	X	X		X	
	2		X	X	X	X
	3	X	X	X	X	X
	4	X	X		X	
	5	X		X		X

Figure 1. A grid of behavioral and substantive elements in educational objectives.

Such a grid simplifies certain complexities in curriculum planning by showing that either the behavioral or the substantive elements or both in a long list of objectives often are repetitive. There is no need to repeat the same behavior over and over (usually in different words) simply because it is inherent in several objectives. By use of the grid, much of the fat is removed from lists of objectives.

Of greater relevance to the present discussion, however, is the revelation that each point of intersection marked with an "X" indicates the need for a learning opportunity to be constructed in such way that both behavior and substance will be developed through it. Thus, using the intersection of behavioral element 2 and substantive element 4 from the Montgomery County list, we see the need to construct learning opportunities through which students will "relate and develop event meanings pertaining to biological processes and interdependencies." The primary data-sources guiding selection are the behavioral and substantive elements; these now serve as organizing elements around which to organize learning opportunities. Secondary data-sources include learners (Have these students been exposed to the topics before?); psychology (Are there transfer possibilities here?); sociology (Are these topics likely to clash with teen-age mores?); logic (Is there a conflict here with some value selected for attainment through education?); parents (Is there likely to be violent disapproval by the parent body?); and so on.

Learning opportunities suggested by the convergence of behavioral and substantial elements in the grid are thus checked against criteria pertaining to readiness of students, economy in learning, appropriateness for the population subculture, desirability, attainability, and so forth. Those that survive this testing process become exemplary for teachers, particularly beginners. But learning to use the criteria for selection is more productive for teacher self-renewal than learning opportunities. Teaching becomes more interesting and more professional, we believe, as teachers become familiar with and adept at the selection and screening of means for achieving educational objectives.

Significant changes in human behavior rarely result from a few random encounters with phenomena. Learning theorists believe that, for most kinds of learning, a theme must recur, with each successive stimulus adding a little elaboration to the previous one. Curriculum programers have made much use of this idea. Alone, these recurring themes are defined as organizing elements. There are two kinds: behavioral and substantive, both derived from the educational objective. A series of well-planned learning opportunities provides for the successive recurrence and elaboration of a behavioral organizing element or a substantive organizing element. Wherever the objective designates both, the learning opportunities provide for the simultaneous recurrence and elaboration of both.

Few curricula involve the development of a single element or single pair of elements. Perhaps a dozen or more are being planned separately in several segments of the total curriculum. For purposes of unity, economy, and efficiency, it is desirable to organize learning opportunities in such way that they develop several organizing elements at once or so that the development of some reinforces others.

Tyler refers to the reiteration of curricular elements as continuity; to their progressive development in depth or breadth as sequence; and to the simultaneous coordination of several so that they buttress each other as integration,[9] terms which are now sufficiently agreed upon in curriculum to facilitate productive discourse about and with them.

The central problem of curriculum organization is one of arranging learning opportunities so as to make optimum use of available time. Given a rational choice of procedures resulting in rational learning opportunities in the first place, the rational plan of curriculum organization is the most efficient plan.

Advocates of "discovery" or inductive reasoning may dispute this point on the grounds that these learning processes often are the slowest means to the attainment of specific learnings, at least at the beginning. This is to miss our point. If induction, not deduction, is what is required, it will have been built into the learning opportunity at the outset - in a rational curriculum. To seek efficiency in organizing the curriculum is simply to seek the most efficient means of arranging these learning opportunities - within which induction is already a built-in commodity. In brief, this is simply to say that there are more and less efficient ways of organizing a curriculum designed to develop inductive thinking. Simple-minded though such a statement may appear, it warrants attention by some curriculum planners who currently are mesmerized with drawn-out discovery lessons that could have been compressed to half the time without loss in either mode or substance.

In Section II, we defined organizing centers for learning as specific learning opportunities set up for identifiable students or for a student. The organizing center, then, is merely a more specific learning opportunity. One broad learning opportunity could serve to spawn many organizing centers for learning. In essence, selecting and organizing learning opportunities is a process of defining the curriculum design for an institution or group of institutions; it is planning at the institutional level. Selecting organizing centers defines the day-to-day activities for teachers and students in the classroom; it is planning at the instructional level. The latter is the former process over again, with the former serving as the primary data-source for the latter.

Figure 2 serves to recapitulate the structural relationships among behavioral and substantive organizing elements, the point of intersection,and time; this point of intersection defines a learning opportunity or an organizing element, and the whole defines the design at either the institutional or the instructional level. The time

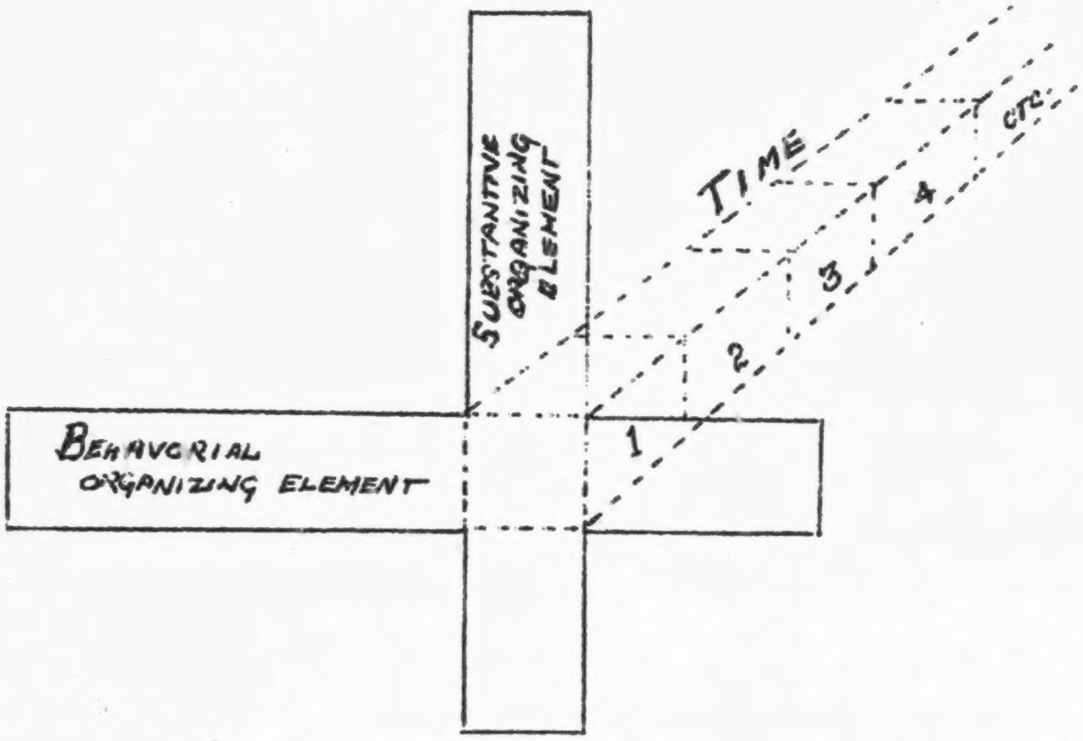

FIGURE 2. THREE DIMENSIONS OF LEARNING OPPORTUNITIES AND ORGANIZING CENTERS.

dimension suggests both the allotment of time for a single organizing center (1 or 2 or 3 or 4 or other) and the arrangement or presentation of the organizing centers through time (1→2 →3 →4, etc.). The dotted lines surrounding each organizing center trace its three dimensions: behavior to be practised in a substantive context through time.

Criteria applicable to screening learning opportunities are equally applicable to the screening of organizing centers for learning. However, since organizing centers are planned for the learning of specific individuals in a particular group, in a known place, at an anticipated time (which may be only seconds from the present), several additional criteria are relevant. In all but a very few of the following, "learning opportunity" might well be substituted for "organizing center":

1. The good organizing center for learning provides student practice in the behavior sought.

2. The good organizing center for learning provides student practice in the behavior sought within the substantive realm to which institutional commitment has been made.

3. The good organizing center for learning is economical of time (e.g., in that it contributes to the simultaneous attainment of several instructional objectives in little more than the time normally employed for attainment of one).

4. The good organizing center for learning is economical of human and natural resources.

5. The good organizing center for learning encompasses ability floors and ceilings of the group.

6. The good organizing center for learning builds on what has gone before and prepares for what is to come.

7. The good organizing center buttresses organizing centers designed for the development of other organizing elements.

8. The good organizing center has educational significance in its own right.

9. The good organizing center for learning is comprehensive in that it includes several catch-hold points for differing student abilities and interests.

10. The good organizing center for learning has capacity for movement - intellectual, geographic, chronological, or other.[10]

The good organizing center is the ripe fruit of rational planning. But to set before learners instructional bowls filled to the brim is to serve fruit already spoiling. There must always be space awaiting the fruits of spontaneous planning by teachers and students together.

FOOTNOTES AND REFERENCES

1. A similar effort, with secondary education as the focus, is represented in Lawrence W. Downey. *The Secondary Phase of Schooling.* Waltham, Mass.: Blaisdell Publishing Co., 1965.

2. Hollis L. Caswell, "Sources of Confusion in Curriculum Theory," *Toward Improved Curriculum Theory*, pp. 113-114. (Edited by Virgil C. Herrick and Ralph W. Tyler). Chicago: University of Chicago Press, 1950.

3. Ralph W. Tyler. *Basic Principles of Curriculum and Instruction*, p. 30. Chicago: University of Chicago Press, 1950.

4. For a discussion (with some research references) of problems involved in separating cognitive and affective domains, see David R. Krathwohl, Benjamin S. Bloom, and Bertram B. Masia. *Taxonomy of Educational Objectives. Handbook II: Affective Domain*, pp. 85-86. New York: David McKay Co., 1964. For a study designed, in part, to test discreteness of categories in the cognitive domain, see M. Frances Klein, "Evaluation of Instruction: Measurement of Cognitive Behavior as Defined by the Taxonomy of Educational Objectives," unpublished doctoral dissertation, 1965.

5. For useful discussions of the concept of structure in the disciplines, see Jerome S. Bruner. *The Process of Education.* Cambridge, Mass.: Harvard University Press, 1960; Stanley Elam (ed.). *Education and the Structure of Knowledge.* Chicago: Rand McNally, 1964; G. W. Ford and Lawrence Pugno (eds.). *The Structure of Knowledge and the Curriculum.* Chicago: Rand McNally, 1964; and Arthur R. King, Jr., and John A. Brownell. *The Curriculum and the Disciplines of Knowledge.* New York: John Wiley and Sons, 1966.

6. See John I. Goodlad. *The Changing School Curriculum.* New York: Fund for the Advancement of Education, 1966.

7. See Edmund S. Hoffmaster, James W. Latham, Jr., and Elizabeth D. Wilson, "Design for Science," *Science Teacher*, 31 (November, 1964).

8. The author's first encountered use of a two-dimensional chart for checking behavioral and content aspects of behavioral objectives in Tyler, op. cit., p. 32.

9. Ibid., p. 55.

10. Adapted from John I. Goodlad, "The Teacher Selects, Plans, Organizes," Learning and the Teacher, pp. 55-58. Washington: Association for Supervision and Curriculum Development, 1959. See also Herrick's "qualities of good organizing centers" in his Selected Writings. Strategies of Curriculum Development, pp. 109-110. (Edited by Macdonald, Andersen, and May). Columbus, Ohio: Charles E. Merrill Books, Inc. 1965.

V

A TENTATIVE CONCEPTUAL SYSTEM

This report consists of an analysis of the process of constructing a rational curriculum, with particular attention directed to the problems of identifying the types of decisions which need to be made in the process. These are decisions of ends and means.

We made a preliminary distinction among three kinds of phenomena: (1) values, (2) educational aims, and (3) learning opportunities. Cutting across these categories is a distinction between general and specific formulations. We concluded that, in the process of rational curriculum construction, one moves from values to educational aims and from the latter to learning opportunities, but also from more general to more specific formulations.

Each of these transitions involves more than one step. In moving from values to educational aims, one first makes a selection of certain values from among the totality of accepted values, and then derives educational aims from these particular values which have been selected for use as premises. In moving from educational aims to learning opportunities, one first defines these aims more precisely as educational objectives and suggests learning opportunities for their attainment. Finally, one defines objectives with great specificity and sets forth organizing centers for the learning of specific individuals or groups.

We have emphasized that although values suggest educational ends, and educational ends suggest learning opportunities, there is a crucial difference between "suggesting" and "logically implying." We have emphasized, further, that one cannot legitimately deduce educational ends from values, or learning opportunities from educational ends, simply on the basis of "logic" or "common sense" alone, but rather must introduce, in order to make such deductions, certain assumptions which are not likely to be "obvious." It follows that consultation with specialists of one kind of another is necessary in making each of the derivations involved.

But while on the one hand we have emphasized the importance of consulting specialists in making the transitions discussed above, we have also emphasized that information provided by such specialists cannot properly serve as the major starting point for curriculum planning. The ultimate starting point for curriculum planning must be a set of values. And, in fact, the most serious difficulty in contemporary curriculum planning appears to be not a failure of curriculum planners to seek information from specialists but, rather, a failure to begin with a set of value premises and to inform various specialists of value decisions already made. As a consequence, specialists called in for various engineering tasks frequently end up not just with advice on how to build the bridge but with decisions to build the bridge elsewhere to serve other purposes.

Hopefully, in consulting various specialists, one gains access to the "best" (in the sense of best substantiated) knowledge available. This does not necessarily mean consulting the most renowned theorists in a field, who will be found to be in dispute with their colleagues over issues and data going far beyond what one is seeking from the particular data-source. In planning graduate-level curricula, however, much of the data needed in selecting organizing elements and learning opportunities will be esoteric and controversial. But, usually, one is seeking knowledge at a high level of agreement among specialists; we have identified this data-source as funded knowledge.

Not all of the data one needs in rational curriculum planning comes from this source, however. For some decisions, it is necessary to find out what citizens believe or wish or what the prospective students already know. In other words, we wish to tap the interests, wishes, beliefs, and understandings of those who sanction the educational system or consume education; in other words, to assess the conventional wisdom.

Rational curriculum planning is a process of evaluation as well as of derivation, occurring at each step along the road toward derivation of organizing centers. Then, with at least segments of the curriculum consumed by students, one draws certain conclusions relative to the effectiveness of these segments before back-tracking on each of the derivations involved to check their rationality.

Figure 3 summarizes the substantive decisions of rational curriculum planning as we have set them forth in this document. The two-way vertical arrows suggest the downward derivation from values, to educational aims, to general educational objectives, to specific educational objectives and the reverse evaluative process. The two-way diagonal arrows suggest the derivation and evaluation, first, of learning opportunities (L.O.) and, second, of organizing centers (O.C.). To keep an already-cluttered chart from becoming even more confusing, time as the third dimension in organizing learning opportunities and organizing centers is omitted from the chart. The two-way horizontal arrows suggest the process of consulting data-sources (funded knowledge on one hand and conventional wisdom on the other),

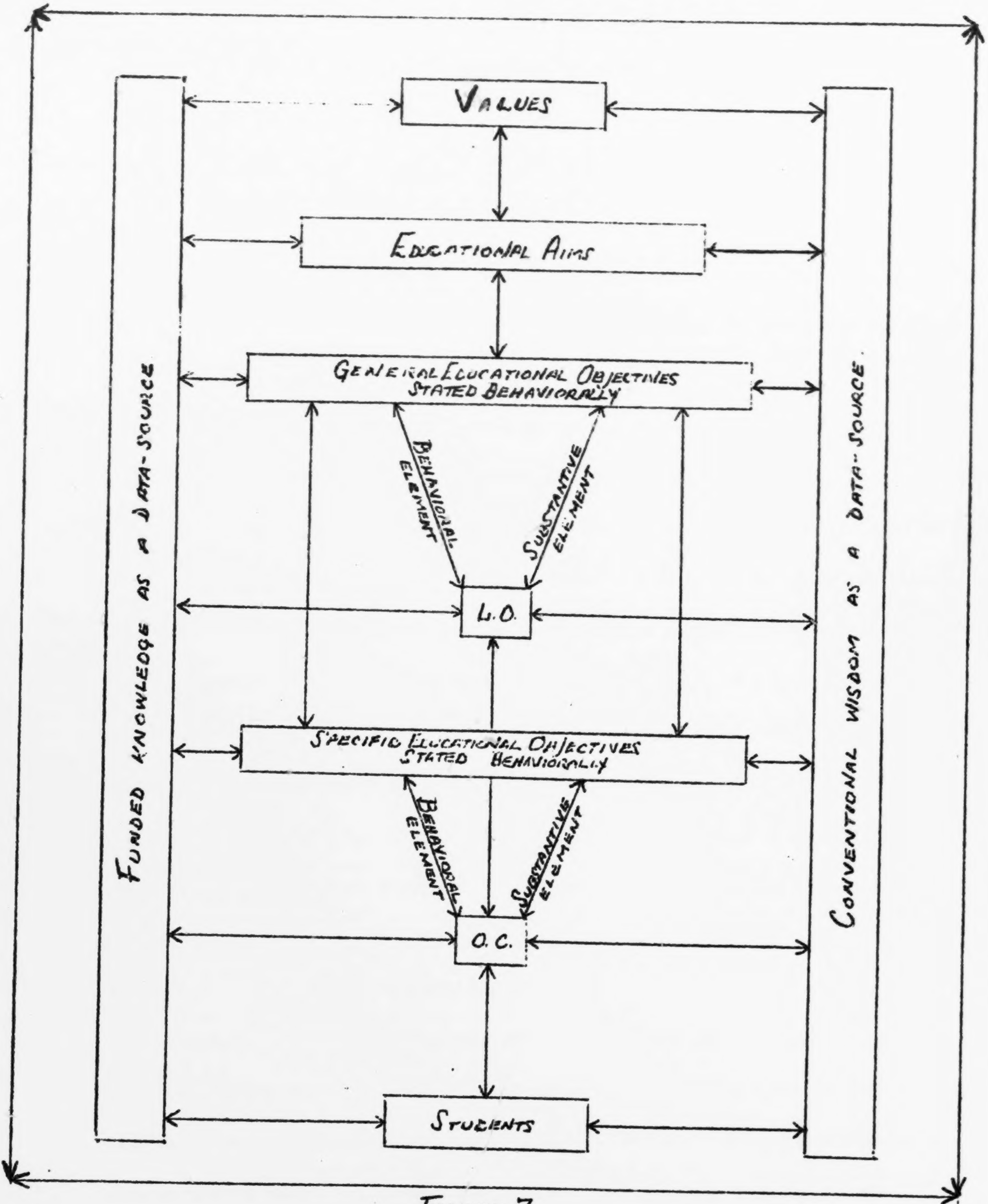
VALUES
EDUCATIONAL AIMS
GENERAL EDUCATIONAL OBJECTIVES STATED BEHAVIORALLY
BEHAVIORAL ELEMENT
SUBSTANTIVE ELEMENT
L.O.
SPECIFIC EDUCATIONAL OBJECTIVES STATED BEHAVIORALLY
BEHAVIORAL ELEMENT
SUBSTANTIVE ELEMENT
O.C.
STUDENTS
FUNDED KNOWLEDGE AS A DATA-SOURCE
CONVENTIONAL WISDOM AS A DATA-SOURCE

FIGURE 3

SUBSTANTIVE DECISIONS AND DERIVATIONS IN A CONCEPTUAL SYSTEM FOR CURRICULUM selecting relevant data, bringing the data into the substantive decision, evaluating effectiveness, and then checking both data-source for relevance and the data selected for authenticity, significance, and so on - again, the reciprocal processes of derivation and evaluation.

The whole is framed with two vertical and two horizontal arrows, each two-way. The two sets of pairs are intended to convey fundamental functions of education (and of any curriculum) which have been implied rather than made explicit in this report. Actually, single vertical and horizontal arrows running through the chart would suffice, but to draw them in this fashion would unduly clutter it.

The initial arrows are designed to suggest that the function of any curriculum is to eliminate the need for attaining a given value by attaining it, "attaining it" defined as producing enough people who possess it to sufficient degree. To attain all the values to sufficient degree is to eliminate the need for education and, therefore, for curricula. Clearly, such a situation is neither desirable nor attainable and yet, seemingly paradoxically, it is the condition toward which societies strive, sometimes vigorously, sometimes apathetically. The self-renewing aspect of this continuing struggle is that the vigorous pursuit of education spawns new values, new aims, and new curricula. This process gives our chart movement through time, a condition we wish we could illustrate visually here.

The horizontal arrows are designed to suggest other effects of education and, therefore, of curricula. Consumption of curricula designed to close the education gap, so to speak, advances conventional wisdom. But it results, ultimately, in the advancement of funded knowledge, too. Again, men struggle to bring the two together but never succeed. This process, too, gives our chart movement through time.

The rational curriculum planning process we have summarized so far is what we have termed an ideological one, resulting in an ideological curriculum. No consideration has been given to the immediately practical question of who makes what decisions. In the real curricular world, there are transactions to be taken into account and to be effected efficiently.

Figure 4 represents an effort to take this world of reality into account. Again, the two-way reciprocal processes of derivation and evaluation, the data-sources, and the two sets of pairs of arrows framing Figure 3 are relevant. However, of these, only arrows depicting derivation and evaluation are shown. But, this time, a new set of vertical arrows appears. Those on the right suggest the two-way transactional processes that take place from level to level in decision-making.

If Figures 3 and 4 were combined into one (producing, unfortunately, a too-cluttered new figure) or if 4 were superimposed upon 3, we would have a reasonably comprehensive pictorial representation of the decisions, data-sources, processes, and so forth discussed in Sections II, III, and IV - and, in effect, of a conceptual system in curriculum satisfying a relatively large number of the criteria for conceptual systems set forth in Section I. Admittedly, it is incomplete. For example, we have referred only in passing to some of the relatively specific data-sources to be consulted. The two general data-sources need to be subdivided to show the precise category to be sought for making each curriculum decision. But no one knows this much yet.

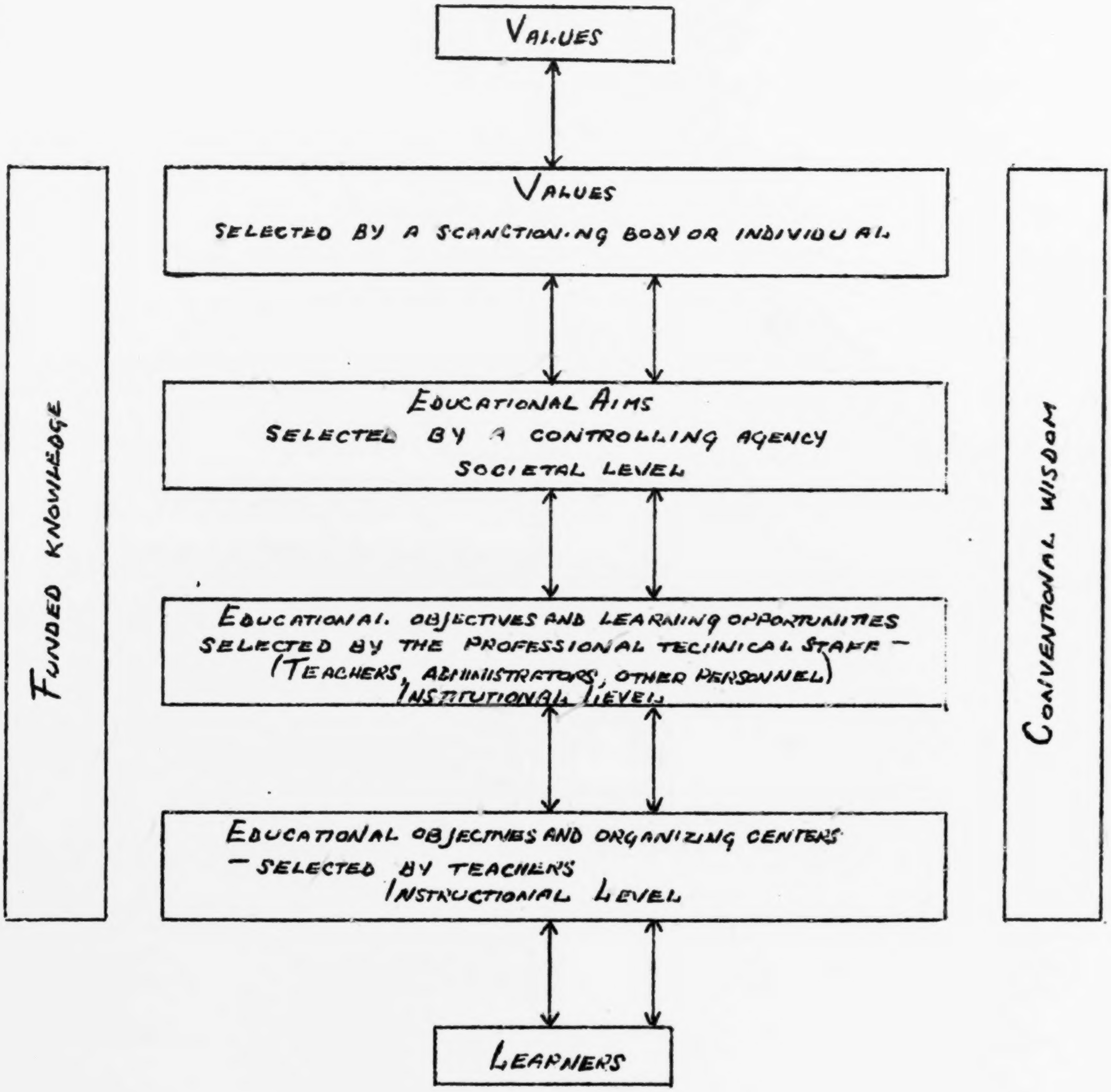
VALUES
VALUES
SELECTED BY A SCANCTIONING BODY OR INDIVIDUAL
EDUCATIONAL AIMS
SELECTED BY A CONTROLLING AGENCY
SOCIETAL LEVEL
EDUCATIONAL OBJECTIVES AND LEARNING OPPORTUNITIES
SELECTED BY THE PROFESSIONAL TECHNICAL STAFF —
(TEACHERS, ADMINISTRATORS, OTHER PERSONNEL)
INSTITUTIONAL LEVEL
EDUCATIONAL OBJECTIVES AND ORGANIZING CENTERS
— SELECTED BY TEACHERS
INSTRUCTIONAL LEVEL
LEARNERS
FUNDED KNOWLEDGE
CONVENTIONAL WISDOM

FIGURE 4

CURRICULAR DECISIONS, LEVELS OF AUTHORITY AND RESPONSIBILITY, DERIVATIONS, EVALUATIONS, DATA-SOURCES AND TRANSACTIONS IN A CONCEPTUAL SYSTEM FOR CURRICULUM.

Perhaps this is as far as it is useful to proceed with this kind of inquiry. Research has as yet little of assistance to provide in effecting the decisions set forth. But since our categories and processes appear to reflect the realities of practice and to suggest what is needed for greater rationality, the first test of the conceptual system is of its usefulness for the organization of such relevant research as is available. And if this system should motivate and give direction to a little theoretical inquiry and a few research studies, we shall be grateful.